The December 2014

Giovanni News

NASA Goddard Earth Sciences Data and Information Services Center (GES DISC)

From the Editor:

Earth's weather and climate affects us in many ways. As this issue goes out, the world's attention is focused on Indonesia, where a commercial aircraft was lost at sea due to the dangers posed by severe storms. This incident reminds us of the loss of Air France Flight 447 several years ago over the Atlantic Ocean, another tragedy caused by severe weather. (Giovanni analyses were used as part of work performed to diagnose the conditions that led to the Air France disaster.)

In just a couple of weeks, we may also find out if the year 2014 will set a new annual global record high temperature (at least in some agency data sets). Giovanni allows insight into where temperatures are high and where they aren't, and may also help figure out why.

We may also find out if the rains that recently fell on parts of California will be sustained enough to help alleviate some of the difficult conditions caused by four years of below-average precipitation.

There are many other ways that the weather and climate affect us, and many ways in which humans affect Earth's environment. One of those ways is highlighted in our Giovanni-4 demo of seasonal time-series analysis in this issue.

All of our best wishes for a happy and profitable and insightful 2014.

Jim Acker, *The Giovanni News* Editor

Research Paper Highlights from November 2014

Correia, A.M., Tepsich, P., Rosso, M., Caldeira, R., and Sousa-Pinto, I. (2014) Cetacean occurrence and spatial distribution: Habitat modelling for offshore waters in the Portuguese EEZ (NE Atlantic). *Journal of Marine Systems*, **143**, 73–85, doi:10.1016/j.jmarsys.2014.10.016.

Nischitha, V., Ahmed, S.A., Varikoden, H., and Revadekar, J.V. (2014) The impact of seasonal rainfall variability on NDVI in the Tunga and Bhadra river basins, Karnataka, India. *International Journal of Remote Sensing*, **35(23)**, 8025-8043, doi:10.1080/01431161.2014.979301.

Turner, M.D., Butt, B., Singh, A., Brottem, L., Ayantunde, A., and Gerard, B. (2014) Variation in vegetation cover and livestock mobility needs in Sahelian West Africa. *Journal of Land Use Science*, doi:10.1080/1747423X.2014.965280

Delgado, D.C.C., and Chiao, S. (2014) The footprints of Saharan air layer and lightning on the formation of tropical depressions over the eastern Atlantic Ocean. *Meteorology and Atmospheric Physics*, 16 pages, doi:10.1007/s00703-014-0343-3.

Mansfield, K.L., Wyneken, J., Porter, W.P., and Luo, J. (2014) First satellite tracks of neonate sea turtles redefine the 'lost years' oceanic niche. *Proceedings of the Royal Society B*, **281**: 20133039. doi:10.1098/rspb.2013.3039

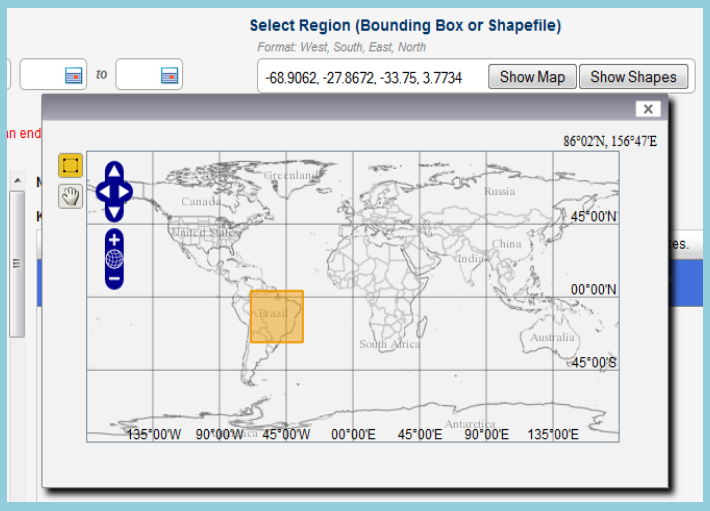
Moreno-Madrinan, M.J., Crosson, W.L., Eisen, L., Estes, S.M., Estes Jr., M.G., Hayden, M., Hemmings, S.N., Irwin, D.E., Lozano-Fuentes, S., Monaghan, A.J., Quattrochi, D., Welsh-Rodriguez, C.M., and Zielinski-Gutierrez, E. (2014) Correlating remote sensing data with the abundance of pupae of the dengue virus mosquito vector, *Aedes aegypti*, in central Mexico. *ISPRS International Journal of Geo-Informatics*, **3(2)**, 732-749, doi:10.3390/ijgi3020732.

Seasonal Time-Series Analysis Example in Giovanni-4:
Aerosol Optical Depth (AOD) over Brazil, 2008-2012

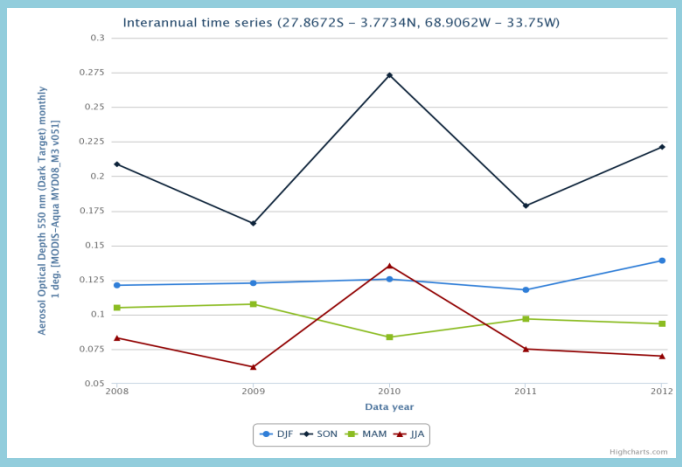
Giovanni-4 provides a long-sought data analysis capability – seasonal (or monthly) time-series analysis. A plot from the time-series analysis was shown in a previous issue of *The Giovanni News*, but that was not the whole story. The time-series analysis in Giovanni-4 also allows a comparison of seasonal or monthly time-series.

It is well-known that biomass burning takes place in Brazil, affecting the air quality in the country and in adjacent countries. Giovanni-4 was used to generate seasonal time-series of aerosol optical depth (AOD) for the period 2008-2012.

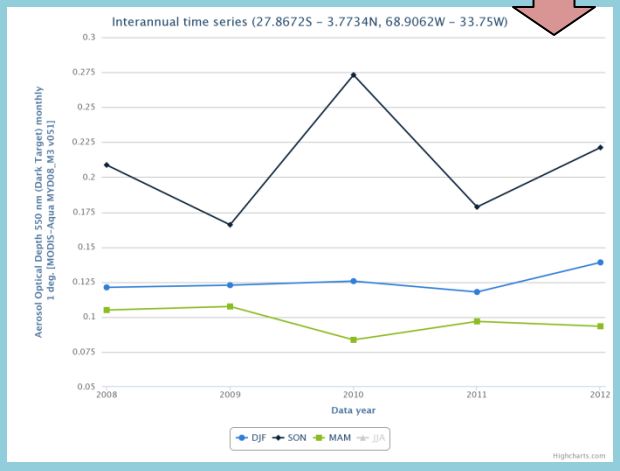
Here is the region analyzed:



The seasonal time-series show that the Sept-Oct-Nov season (black) has significantly elevated AOD compared to the other seasonal periods.



Clicking on the legend can remove or add the seasonal time-series plots, to enable comparisons.



Neither snow, nor rain, nor gloom of night –
or high temperatures, strong winds,
smoke, ozone, floods, or droughts –
will stop Giovanni from displaying its data.

In fact,
it has data on all of those things.

http://giovanni.gsfc.nasa.gov

Where the rain fell in California

After a long period of hardly any rain at all, the Pacific Ocean sent a modicum of moisture to the dry state in early December. While the rain itself was not a great amount (though it did cause flooding and landslides in some susceptible places), the precipitation may have helped replenish the snowpack in the Sierra Nevada, and did help fill some depleted reservoirs. Time will tell if this was a one-time event for the 2014-2015 winter, or if more rain is on the way in the ensuing months.

The Giovanni animation feature provided a glimpse of where the rain fell each day during the approximately week-long period of welcome wet weather. Note that the dynamic color scale palette was used here – the heaviest days of rain were on December 11 and 12.